



# The effect of class composition on cross-curricular competences – Students with special educational needs in regular classes in lower secondary education



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## ABSTRACT

This study investigates how the proportion of SEN students in regular classes is related to the student-level and class-level cross-curricular competences. The data (N = 5368) come from a large-scale, longitudinal assessment study conducted on students at the beginning and end of lower secondary education in a Finnish metropolitan area. The results of the multilevel regression models showed that students in regular classes with SEN students performed on average lower than students in classes without SEN students, and that the proportion of students with SEN in class weakly predicted negatively the ninth-grade test scores. Furthermore, SEN students seemed to perform at the same level regardless of the proportion of other SEN students in class. However, students without SEN in classes with SEN students performed slightly lower than their peers in classes without SEN students in the ninth-grade assessment even when the initial differences related to placement were taken into account.

## 1. Introduction

In the present study, class composition effect is examined in terms of the proportion of students with special educational needs in class. In general, the placement of different students into the same classroom can have an impact on academic performance measured either by school grades or test performance. It can also affect non-cognitive outcomes such as socio-emotional functioning or well-being at school (i.e., Ruijs & Peetsma, 2009; Ruijs, Van der Veen, & Peetsma, 2010). It is evident that purposeful sorting of students into classrooms is one way of managing student diversity in schools and responding to the initial students differences (Harker & Tymms, 2004; Kupiainen & Hienonen, 2016). The aim of the placement practices can be to create heterogeneous and more balanced classes for example by placing students with and without SEN into the same classrooms or to form more homogenous classes and place these students into separate classrooms. Various factors affect the student placement practices in schools, such as student background, prior achievement, behavioral issues, parental requests, and previous interactions with teachers or other students (Konstantopoulos & Traynor, 2014; Paufler & Amrein-Beardsley, 2013).

Especially when assigning students with different special educational needs into classrooms, in addition to the best interests of the students, the resources and available support as well as the best interest of teachers are taken into consideration (Jahnukainen, 2015).

In Finland, the differences between classes is relatively high, accounting on average for 10 to 15 percent of the variation in different test achievement (Thuneberg, Hautamäki, & Hotulainen, 2015; Yang Hansen, Gustafsson, & Rosen, 2014). In many school-effect studies, achievement differences are found to be related to differences in the composition of the student body (Harker & Tymms, 2004). The same mechanism can be assumed to apply to class-level differences as well, partly due to non-random student assignment practices.

There is much debate about what would be the optimal proportion of students with SEN in a certain class: often strong opinions are presented with contradictory or little evidence. The present study examines how class composition, in terms of the proportion of students with SEN, predicts the students' cross-curricular competences at the class level. It also examines, how this proportion is related to the cross-curricular competences of students with and without SEN. We use the term 'students with SEN' of students who receive Tier 2 or Tier 3 level

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support according to the Finnish three-tiered support model described in Section 1.1. For students who do not receive Tier 2 or Tier 3 support, we use the term ‘students without SEN.’ However, they may receive Tier 1 support. Furthermore, this study focuses on regular classes and we use the term ‘regular classes with SEN students’ when referring to the classes where there is at least one student receiving Tier 2 or Tier 3 support. To distinguish, other classes are referred as ‘regular classes without SEN students.’

### 1.1. Multi-tiered support model in Finland

In Finland, the special education system is referred to as Learning and schooling support and it has been based on three tiers since 2011 (Basic Education Act 628/1998 Amendment 642/2010). The system is based on the observed educational needs, not on a medical diagnosis. The aim is to bring the support to the student rather than bring the student to the support services (Jahnukainen & Itkonen, 2016).

The three levels are general (Tier 1), intensified (Tier 2), and special (Tier 3) support. The support methods and tools are almost the same at all tier levels; however, the intensity of the provided support increases from one level to the next (FNBE, 2016; Thuneberg et al., 2013). Tier 1 general support is targeted to the whole student population; hence, official statistics are not compiled. Tier 2 intensified support is implemented when a student needs a longer period of support, or more intense support. A total of 9% of comprehensive school students received Tier 2 support alongside mainstream education. Tier 3 special support consists of the whole continuum of special education services and an administrative decision as well as an individual education plan (IEP) is always required. A total of 7.5% of all comprehensive school students received Tier 3 support in regular classes, special classes, or special schools (OSF, 2017). In the present study, we use the term students with SEN of all Tier 2 and 3 students even though not all Tier 2 students have actual disabilities. This is in accordance with the ISCED definition for SEN student defined by the additional support provided to their education (UNESCO, 2012).

### 1.2. The placement of students with SEN

As education providers, Finnish municipalities handle practical teaching arrangements and are responsible for the effectiveness and quality of education in their districts (FNBE, 2016). There are no regulations governing mainstream education class size and schools determine how to assign students to classrooms.

From a legislative perspective, all comprehensive school students are in the same education system (Basic Education Act 628/1998; FNBE, 2016). This is in line with the United Nations' Convention on the Rights of Persons with Disabilities (2006). Tier 2 support is provided as a part of mainstream education using flexible teaching arrangements. Thus, from a normative perspective, they should always be placed in regular classes. Tier 3 support is “provided, allowing for the pupil's interests and the facilities for providing the education, in conjunction with other instruction or partly or totally in a special-needs classroom or some other appropriate facility” (Basic Education Act 628/1998, 17 §). In 2016, of all comprehensive school students, 2.1% were taught fully in special education classes in mainstream schools and 0.7% in special schools (OSF, 2017). The idea of a least restrictive environment often underpins such decisions; nevertheless, totally inclusive schools are rare in Finland (Jahnukainen, 2015). According to the Basic Education Decree (852/1998), in education given to students receiving Tier 3 special support, the teaching group may consist of a maximum of ten Tier 3 students. In the present study, special education classes are excluded from the analyses; thus, Tier 3 students in our data are either fully or partly integrated into the regular classes, which in this study are called ‘regular classes with SEN students.’

The support and guidance, needed by the student, is defined for Tier 2 students in an Individual Learning Plan and for Tier 3 students in an

Individual Education Plan. At all tier levels, support can be given as a part of mainstream education by co-teaching, remedial teaching, or part-time special education. Furthermore, at the Tier 3 level, support can be provided as temporal individual or small group learning, or support can be arranged partly or totally in special education classes. Available resources and support in school define the placement of SEN students along with the student's individual needs (FNBE, 2016; Jahnukainen, 2015). In general, in the current support system, support is provided more in regular classes and in that sense, “It is fair to state that Finnish education is special for all: When a classroom or subject-teacher co-teaches with a special education teacher, it involves all the students besides the individuals who have been identified as being in need of support (Thuneberg et al., 2013, p. 71).”

### 1.3. Class composition effect

The term ‘compositional effect’ is used when a class-level aggregate of a student-level variable makes an independent contribution to the explanation of outcome variance (Harker & Tymms, 2004). In other words, classroom composition affects the achievement of an individual student (Zimmer & Toma, 2000). The possible class composition effect exists partly due to the purposeful sorting of students into classrooms. One explanation for the compositional effect is that two students with a similar initial level, but who are placed in different classes can be predicted to have different achievements depending on the average achievement level of their classmates. One assumption is that a student will make more progress if the average ability level of the class is higher; conversely, a student will make less progress if there are more low-performing students with support needs in the class (Belfi, Goos, De Fraine, & Van Damme, 2012; Peetsma, van der Veen, Koopman, & van Schooten, 2006). Student placement practices are always choices between creating either more heterogeneous or more homogenous classrooms. It can also be assumed that teaching a homogeneous group of students is more efficient than teaching a class of more heterogeneous students who have diverse support needs (Belfi et al., 2012).

When a student with SEN is placed in a regular class, the effects on the academic achievement of other students can be either positive, negative, or neutral. Furthermore, even within one study, the effects have been highly variable between schools and classes (Dyson, Farrell, Polat, Hutcheson, & Gallannaugh, 2004; Huber, Rosenfeld, & Fiorello, 2001). By and large, there seem to be clearly more positive than negative effects, but for the most part, the effects are neutral when both the cognitive and non-cognitive outcomes are considered (i.e., Hanushek, Kain, & Rivkin, 2002; Kalamouka, Farrel, Dyson, & Kaplan, 2007; Rouse & Florian, 2006; Ruijs, 2017; Ruijs & Peetsma, 2009; Ruijs et al., 2010). This can be explained by the differential effects: when for one class the effect is positive and for another negative, the average will be neutral (Ruijs & Peetsma, 2009).

For students with SEN, studying in regular classes might be beneficial because they can learn from more able peers, yet they may feel less motivated and more insecure about their own achievement if they compare themselves to their higher-achieving peers (Belfi et al., 2012; Ruijs & Peetsma, 2009). According to a review study conducted by Ruijs and Peetsma (2009), there are indeed indications that students with SEN achieve better in inclusive settings than in non-inclusive settings. On students without SEN, learning together with SEN students can have negative effects, if the general standard of education in the class is lowered due to more low-performing students (Huber et al., 2001; Peetsma et al., 2006) or if the teacher expectancy is low for the whole class (Goldenberg, 1992). Furthermore, teacher may pay more attention to the students with SEN, which requires other students to study more independently (Dyson et al., 2004; Ruijs, 2017). However, according to previous research, the additional support given to a lower performing students can indirectly enhance the performance of the whole class (Dyson et al., 2004; Thuneberg et al., 2013). Quite often these compositional effects are examined with a cross-sectional design. The

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